

## **REMARKS/ARGUMENTS**

### **The Claims**

Claims 1-17 are in the application.

No claims have been allowed.

Claims 10, 12 and 15 are amended.

Claim 11 has been canceled.

New claims 18, 19 and 20 have been added to the application.

### **Claim Rejections-35 USC § 102**

Claim 1 is rejected under 35 U.S.C. 102 (b) as being clearly anticipated by Iseki (6,439,601). Applicant respectfully traverses the rejection of claim 1 under 35 U.S.C. 102 (b) as being clearly anticipated by Iseki or the following reasons (*emphasis added*):

#### **Iseki US 6,439,601**

Iseki discloses an *air inflatable* seat belt having an *air bag*, tubular mesh (single inflatable tube) and a cover that resists bending in the lateral direction but permits bending in the longitudinal direction.

The seat belt disclosed by Iseki is air inflatable seat belt. Iseki relies upon the application of a pressurized gas into a bag in the webbing to cause the webbing to change shape. In contrast, claim 1 of the present application requires a seat belt system comprising seat belt webbing that includes “a *solid material* sufficiently configured to selectively effect a shape or dimensional change in the webbing in response to an activation signal.” The shape changing webbing of Iseki is not solid as the shape changing component is a air bag with a void therein to receive a pressurizing gas. The applicant’s solid material is disclosed in paragraph 0020 of the applicant’s originally filed specification, which recites in part (*emphasis added*):

--- the first material 60 is a *solid* material in a form that enables the webbing to be flexible. For example, the first material 60 may be in the form of fibers or wires. In a preferred embodiment, the first material 60 is a shape memory material that *changes shape or size in response to an activation signal*, such as a shape memory alloy. In another preferred embodiment, the first material 60 is a contractile polymer, such as artificial muscle fibers, which reversibly contracts and expands in response to chemical or electrical stimuli.

Refer also to paragraph 0003 of the applicant's originally filed specification which recites in part (*emphasis added*):

The *solid* material is preferably a *shape memory material* or a *contractile polymer* that exhibits abrupt volume changes in response to variations in external conditions, such as *mechanical, chemical or electrical stimuli*.

In Iseki, the activation signal triggers a gas generator 9 (Iseki, column 1, lines 35-48) which supplies gas to inflate the passages of Iseki's air belt. The air belt of Iseki does not have a "solid material sufficiently configured to selectively effect a shape or dimensional change in response to an activation signal" as in the applicant's claim 1. Therefore Iseki does not anticipate the applicant's claim 1.

In view of the above discussion, we respectfully request reconsideration and withdrawal of the rejection of claim 1 under 35 U.S.C. 102 (b) as being clearly anticipated by Iseki (6,439,601).

Claims 1, 2 and 15 are rejected under 35 U.S.C. 102 (e) as being anticipated by Stonich et al. (6,598,899). ). Applicant respectfully traverses the rejection of claim 1 under 35 U.S.C. 102 (b) as being clearly anticipated by Stonich or the following reasons (*emphasis added*):

Stonich US 6598899

Stonich discloses a seat belt having an *inflatable* portion having at least one electrically energized micromechanical device (MEMS) to supply *inflation fluid* to the inflatable portion of a seat belt. Stonich discloses a vehicle condition sensor and controller.

As in the earlier discussion of Iseki, the seat belt disclosed by Stonich is air inflatable seat belt. Stonich relies upon the application of a pressurized inflation fluid to cause the webbing to change shape. In contrast, claims 1 and 2 of the present application require a seat belt system comprising seat belt webbing that includes “a solid material sufficiently configured to selectively effect a shape or dimensional change in the webbing in response to an activation signal”, as discussed earlier regarding Iseki. Similarly, amended claim 15 requires “causing a solid material in the seat belt webbing to effect a dimensional or shape change.” In Stonich, the activation signal energizes MEMS devices to supply inflation fluid to the inflatable belt. Stonich does not disclose a “seat belt webbing including a *solid* material sufficiently configured to selectively effect a shape or dimensional change in the webbing in response to an activation signal” as claimed in applicant’s claim 1, as discussed with Iseki earlier.

Therefore Stonich does not anticipate applicant’s claim 1. Claim 2 depends from claim 1; therefore claim 2 is not anticipated by Stonich.

In view of the above discussion and the amendment of claim 15, we kindly request the withdrawal of the rejection of claims 1, 2 and 15 under 35 U.S.C. 102 (b) as being anticipated by Stonich.

Claims 1-4 and 15 are rejected under 35 U.S.C. 102 (e) as being anticipated by McFalls (US 2005/00678826). Applicant respectfully traverses the rejection of claims 1-4 and 15 under 35 U.S.C. 102 (e) as being anticipated by McFalls for the following reasons.

McFalls US 2005/0067826

McFalls discloses a seat belt with webbing and a device to failably decouple from the seat belt (allowing the seat belt to extend in length) as a result of tension in the belt exceeding a failure threshold. Upper loop (60) in seat belt is configured to tear when tension exceeds threshold (paragraph 0023).

Similar to the discussion above with Stonich and Iseki, McFalls does not disclose the applicant's seat belt system comprising seat belt webbing that includes a solid material sufficiently configured to selectively effect a shape or dimensional change in the webbing in response to an activation signal, as recited in applicant's claim 1. As discussed above, claim 15 has been similarly amended, and is therefore not anticipated.

Therefore McFalls does not anticipate applicant's claim 1. Claim 2-4 depend directly or indirectly from claim 1 and are therefore not anticipated by McFalls.

Regarding claim 15, claim 15 has been amended to recite, among other things:

wherein the seat belt webbing includes a solid material sufficiently configured to selectively effect the shape or dimensional change.

The amendment to claim 15 was discussed earlier with Stonich.

In view of the above discussion and the amendment of claim 15 we kindly request the withdrawal of the rejection of claims 1, 2, 3, 4 and 15 under 35 U.S.C. 102 (e) as being anticipated by McFalls.

Claims 1, 6, 10-12 are rejected under 35 U.S.C. 102 (b) as being clearly anticipated by Terry et al. (3,430,979). Applicant respectfully traverses the rejection of claims 1, 6, 10-12 under 35 U.S.C. 102 (b) as being anticipated by Terry et al. for the following reasons.

Terry et al. US 3430979

Terry discloses an air/gas inflatable cushioning device having inflatable air bags, configured to change shape but not length when inflated. Terry's shape changing material is not a 'solid' material (as discussed earlier with Iseki) but is instead a 'flexible material bag such as polyethelyne' (col 2, ln 37-40) having a void to receive a pressurizing gas.

Similar to the discussion above with Stonich, Iseki and McFalls, Terry et al. does not disclose the applicant's seat belt system comprising seat belt webbing that includes a solid material sufficiently configured to selectively effect a shape or dimensional change in the webbing in response to an activation signal, as recited in applicant's claim 1, and as discussed in detail earlier above.

Regarding claim 10, claim 10 has been amended to include the limitations of dependent claim 11. Claim 10 now recites, among other things:

--- seat belt webbing having a plurality of ribs that are selectively expandable in response to an activation signal to effect a shape or dimensional change in the webbing, said seat belt webbing including a tapered portion having a wide end and a narrow end ;

Support for the amendment of claim 10 can be found, among other places, originally filed claim 11.

Claim 11 has been canceled. Claim 12 depends directly or indirectly from amended claim 10 and is therefore not anticipated by Terry et al.

In view of the above discussion and the amendment of claim 10, we kindly request the withdrawal of the rejection of claims 1, 6, 10 and 12 under 35 U.S.C. 102 (b) as being clearly anticipated by Terry et al. (3,430,979).

### **Claim Rejections-35 USC § 103**

Claim 5 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Iseki in view of Namiki (6,805,380). Applicant respectfully traverses the rejection of claims 5 under 35 U.S.C. 103(a) as being unpatentable over Iseki in view of Namiki (6,805,380) for the following reasons.

#### **Namiki US 6805380**

Namiki discloses an air inflatable belt system having a single bag inside a webbed restraint belt with the inflating portion of the belt near the motor bike rider's head, the bag inflating to widen the belt to cushion forward movement of the head on impact. The tapered wide end of the belt of Namiki is a head cushion portion of the belt.

The Examiner relies upon Namiki for the tapered portion of the seat belt. Claim 5 depends indirectly from claim 1.

Similar to the discussion above with Stonich, Iseki, McFalls, and Terry, Iseki in view of Namiki does not disclose the applicant's seat belt system comprising seat belt webbing that includes a solid material sufficiently configured to selectively effect a shape or dimensional change in the webbing in response to an activation signal, as recited in applicant's claim 1, and as discussed in detail earlier with the Iseki U.S.C. 102 rejection of claim 1. Claim 5 depends directly from claim 1 and is therefore patentable over Iseki in view of Namiki.

In view of the above, we kindly request the withdrawal of the rejection of claim 5 under 35 U.S.C. 103 (a) as being unpatentable over Iseki in view of Namiki (6,805,380).

Claim 7 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Iseki in view of Benitez, Jr. et al. (3,499,681) and further in view of Flint (3,560,048). Applicant respectfully traverses the rejection of claims 7 under 35 U.S.C. 103 (a) as being unpatentable over Iseki in view of Benitez, Jr. et al. (3,499,681) and further in view of Flint (3,560,048) for the following reasons.

Benitez, Jr. 3499681

Benitez discloses a passive seat "constraint vest", not a "seat belt having webbing including a solid material selectively configured to effect a shape or dimensional change" as recited in applicant's claim 1. The passive seat vest of Benitez has flaps fastenable around the front portion of the vest. We read the Benitez reference as non-analogous art.

Flint 3560048

Flint discloses a suspension safety seat having a seat belt and shoulder straps. The Examiner relies upon the Flint reference for the disclosure of the first and second seat belt segments, buckle and tongue members.

Iseki in view of Benitez, Jr. et al. (3,499,681) and further in view of Flint (3,560,048) does not disclose the applicant's seat belt system comprising seat belt webbing that includes a solid material sufficiently configured to selectively effect a shape or dimensional change in the webbing in response to an activation signal, as recited in applicant's claim 1, and as discussed in detail earlier above. Claim 7 depends from claim 1. Therefore applicant's claim 7 is patentable over Iseki in view of Benitez, Jr. et al. (3,499,681) and further in view of Flint (3,560,048).

In view of the above, we kindly request the withdrawal of the rejection of claim 7 under 35 U.S.C. 103 (a) as being unpatentable over Iseki in view of Benitez, Jr. et al. (3,499,681) and further in view of Flint (3,560,048).

Claim 8 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Iseki in view of Takaara et al. (JP06025936A). Applicant respectfully traverses the rejection of claims 8 under 35 U.S.C. 103 (a) as being unpatentable over Iseki in view of Takaara et al. (JP06025936A) for the following reasons.

Takaara et al. (JP06025936A)

Takaara teaches a seat belt in which nickel-Ti shape memory alloy 3 (Takaara drawing 1) having superelasticity characteristics is sewn into a fabric cloth 1 using sewing yarns 2. Takaara sews nickel-Ti shape memory alloy into a seat belt to utilize its superelastic properties. The 'Technical Problem' section of Takaara recites (in translation attached as EXHIBIT A):

Problem(s) to be Solved by the Invention

However, when cloth was used as an ingredient of a seat belt, the difficulty of there being little elasticity of a certain thing, and the force concentrating on some bodies to impacts, such as a collision, and being easy to leave the remains of a crack by pressure to the body had the merit which it is cheap and is easy to use. Furthermore, in case it equips, cloth loosened softly and has also produced faults, such as hanging down.

[0006] Then, the technical technical problem of this invention is offering the seat belt using the superelastic property of protecting the body against impacts, such as a collision, equally and moreover being easy to equip them with it, in view of the above-mentioned fault.



The Examiner relies upon Takaara to disclose a seat belt in which the solid material sufficiently configured to selectively effect a shape or dimensional change in the webbing in response to an activation signal (from claim 1) is a shape memory material (from claim 8). Takaara does not disclose such a seat belt.

As Takaara states, Takaara is using shape memory material for its superelastic properties alone, overcoming the limitation of seat belts with “little elasticity” with a seat belt having “superelasticity characteristics” to minimize injuries during an impact by providing a seat belt that can stretch without snapping, reducing injuries. The Abstract of Takaara recites (in translation):

PURPOSE: To obtain a seat belt capable of uniformly protecting the human body when an impact is applied thereon, also easy to wear and fix, by sewing a specific shape memory alloy having superelasticity characteristics into a fabric cloth.

As can be understood from the above and Takaara's disclosure, claim and drawings, Takaara's shape memory material is not the “solid material sufficiently configured to selectively effect a shape or dimensional change in the webbing in response to an activation signal” as recited in applicant's claim 1. Takaara's shape memory material is not receptive to nor response to an activation signal. Claim 8 depends from claim 1. Therefore, claim 8 is patentable over Iseki in view of Takaara.

In view of the above, we kindly request the withdrawal of the rejection of claim 8 under 35 U.S.C. 103 (a) as being unpatentable over Iseki in view of Takaara et al. (JP06025936A).

Claims 10, 11, 14 and 17 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Iseki in view of Benitez, Jr. et al. (3,499,681), Flint (3,560,048) and further in view of Momose (JP03067751). Applicant respectfully traverses the rejection of claims 10, 11, 14 and 17 under 35 U.S.C. 103 (a) as being unpatentable over Iseki in view of Benitez, Jr. et al. (3,499,681), Flint (3,560,048) and further in view of Momose (JP03067751) for the following reasons.

The Iseki and Benitez references were discussed earlier above.

Momose (JP03067751)

Momose discloses a vehicle seat belt having compositely fitting shape memory material. The seat occupant connects the two ends of the seat belt. A switch is operated to electrically heat the shape memory material, deforming the belt with recovery of memorized shape. The seat belt of Momose includes an over-the-shoulder portion.

In Momose, the seat belt has electrically heated shape memory material to deform the belt with recovery of memorized shape. The set belt of Momose does not disclose a seat belt system having a plurality of ribs that are selectively *expandable (emphasis added)* in response to an activation signal as claimed in applicant's claim 10. The seat belt of Momose is mounted to the floor of the vehicle and not mounted with respect to the seatback portion of the seat as recited in applicant's claims 10 and 17. The seat belt of Momose has an over-the-shoulder portion. In contrast, applicant's claim 10 and 17 which recite that the seat belt is characterized by the absence of an over-the-shoulder portion. Amended claim 10 further recites

seat belt webbing having a plurality of ribs that are selectively expandable in response to an activation signal to effect a shape or dimensional change in the webbing, said seat belt webbing including a tapered portion having a wide end and a narrow end;

which Iseki in view of Benitez, Jr. et al. (3,499,681), Flint (3,560,048) and further in view of Momose (JP03067751) clearly do not disclose. As discussed earlier, the Benitez reference discloses a passive constraint vest, not a seat belt system, and is non-analogous art. Therefore applicant's claims 10 and 17 are patentable over Iseki in view of Benitez, Jr. et al. (3,499,681), Flint (3,560,048) and further in view of Momose (JP03067751). Claim 11 has been canceled as discussed earlier. Claim 14 depends from claim 10 and are therefore also patentable over the cited references.

In view of the above, we kindly request the withdrawal of the rejection of claim 10, 14 and 17 under 35 U.S.C. 103 (a) as being unpatentable over Iseki in view of Takaara et al. (JP06025936A).

Claims 10, 11, 14 and 17 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Iseki in view of Benitez, Jr. et al. (3,499,681), Flint (3,560,048) and further in view of Terry et al. (3,430,979). The Iseki, Flint and Benitez references were discussed earlier above.

The Examiner states that Terry teaches a seat belt system having a plurality of ribs wherein the distance between each of the ribs 19, 21, and 23 is greater at the wide end of the tapered portion (of the belt) than the narrow end of the tapered portion (tapered portion as recited in applicant's original claims 11 and 17).

Applicant respectfully traverses the rejection of claims 10, 11, 14 and 17 under 35 U.S.C. 103 (a) as being unpatentable over Iseki in view of Benitez, Jr. et al. (3,499,681), Flint (3,560,048) and further in view of Terry et al. (3,430,979) for the following reasons.

Terry discloses an air/gas inflatable air bag belt. Terry does not disclose a seat belt system wherein the distance between each of the ribs 19, 21, and 23 is greater at the wide end of the tapered portion (of the belt) than the narrow end of the tapered portion.

Please refer to Terry Figure 3. The seat belt of Terry does not have a tapered portion having narrow and wide ends. The inflated air bags 19, 21, 23 of Terry are tapered when inflated (as air bags) away from the belt, however the seat belt webbing of Terry is not tapered.

Regarding claim 10, Iseki in view of Benitez, Jr. et al. (3,499,681), Flint (3,560,048) and further in view of Terry et al. (3,430,979) do not disclose a seat belt system having a plurality of ribs that are selectively *expandable (emphasis added)* in response to an activation signal. The cited references also do not disclose webbing mounted with respect to a seatback portion of the seat.

In view of the above, we kindly request the withdrawal of the rejection of claim 10, 11, 14 and 17 under 35 U.S.C. 103 (a) as being unpatentable over Iseki in view of Benitez, Jr. et al. (3,499,681), Flint (3,560,048) and further in view of Terry et al. (3,430,979).

Claims 9 and 16 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Iseki in view of Pelrine et al. (6,911,764). The Iseki reference was discussed earlier above.

Pelrine US 6,911,764

Pelrine teaches polymers that convert between mechanical and electrical energy and that may be used to perform work. Pelrine does not disclose a vehicle restraint device nor a seat belt. As Pelrine does not disclose nor teach the use of the polymers with a vehicle restraint belt, we see Pelrine as non-analogous art.

The Examiner relies upon Pelrine to teach a vehicle restraint belt made of a contractile polymer, which Pelrine, in our reading, does not teach.

Claim 9 depends from claim 1 which is in condition for allowance. Therefore claim 9 is also allowable. Claim 16 recites, among other things

seat belt webbing including a contractile polymer that is sufficiently configured to contract in response to a force exerted by the occupant on the seat belt webbing.

In view of the above discussions, we kindly request the withdrawal of the rejection of claims 9 and 16 under 35 U.S.C. 103 (a) as being unpatentable over Iseki in view of Pelrine et al. (6,911,764).

Regarding new claims 18, 19 and 20

New claim 18 depends from claim 3. New claim 19 depends from allowable claim 18. New claim 20 depends from claim 6.

Claim 18 depends from claim 3 and recites the limitation of at least one occupant size sensor secured on the seat belt webbing, the sensor configured to transmit signals indicative of size of the occupant to said controller. Support for new claim 18 is found in paragraph 0019 of the applicant's originally filed specification.

Claim 19 depends from claim 18 and recites the limitation that the sensor detected size of the occupant modulates the activation signal affecting the rate at which the shape or dimensional change in the webbing occurs. Support for new claim 19 is found in paragraph 0019 of the applicant's originally filed specification.

Claim 20 depends from claim 6 and recites the limitation that the wide end of the webbing is adjustably mounted to a track secured to the seatback portion of the vehicle seat permitting the seat belt webbing to be selectively vertically adjustable. Support for new claim 20 is found in paragraph 0012 of the applicant's originally filed specification.

Based on the above, we kindly request that the Examiner enter new claims 18, 19 and 20 into the present application.

**CONCLUSION**

In view of the presented arguments, amendments and discussion, we request the withdrawal of the rejections under 35 U.S.C. 102(b), 35 U.S.C. 102(e) and 35 U.S.C. 103 (a) and the allowance of claims 1-20. All claims are now believed to be in condition for allowance, which action is respectfully requested.

Please charge any fees that may be due to Deposit Account 07-0960.

Respectfully submitted,

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Date: November 30, 2006

Attachment: Exhibit A